104924

USGS - BAMG

SEISMIC/GEOPHYSICS LOG

and Navigation

SHIP: R/V Cape Hatteras CHAT 95025

CRUISE: CH-18-95 Leg 1

AREA: Blake Outer Ridge

DATES: 15 Nov 95 - 20 Nov 1995

CHIEF SCIENTIST: D. Hutchinson

SHIP: R/V Cape Hatteras

CRUISE: CH-18-95

DATES: 15 Nov 95 -

AREA: Blake Outer Ridge

CHIEF SCIENTIST: D. Hutchinson

PERSONNEL/AFFILIATION/FUNCTION

D. Hutchinson - USGS
T. O'Brien - USGS
H. Williams - USGS
I. Pecher - WHOI
D. Lizarralde - WHOI.
J. Evans - volunteer
T. Hoehler - UNC

J. Gunther - Popular Science
J. Rush - Ch 4 Independent News
A. Veitsch - "
R. Hammond - "

Local + 05 hrs = Zulu.

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	LAT. Navigation	LONG. Seismic System Sweep/Fire/Filters	Tape# Disk#	~~Roll#~~	COMMENTS ~~Magnetics~~ ~~Gravity~~ ~~Comments~~
	15NOV	1323							Depart Duke Marine Lab Dock
	16NOV.								First Light - transfer Media
									+ Tori Hoehler + lots of
									boxes to Resolution. Seas.
									moderated some. Occassional
									white caps
JD 320	16NOV	1400							Begin gun calibration tests.
		1700							Underway calibration tests
									not working well, so switch
									to SCS line A-A' to run a
									comparison.
									GI gun tuning only during
									afternoon - as towed
									off starboard winch at
									5+ m depth + delay = 40 ms.
									GI gun = 105/105 in^3
		2200							Pick up Media folks from
									Resolution

Line#	YrMoDy +JulDy	UTC Time ~~+Zone~~	Crs	Spd	PCODE POS, Navigation	e.g. guns used Seismic System Sweep/Fire/Filters	Tir. name ~~Tape#~~ ~~Disk#~~	depth of rec. ~~Roll#~~	Comments (e.g. weather) Magnets Gravity	Comments
±										
JD 321	17 Nov	00:10							Gear streamed in water	
									for SOL #1 - waypt D→C	
									This is also line 31 which	
									connects all drill sites.	
SOL 1		00:12							Start new program (Debbie5)	
		00:14			57.158" 31°57'09.47"	19.282 75° 19' 16.93"			GI Gun 105/105	
		00:20			56.898 31° 56' 53.87	19.633 75 19 37.95"			Streamer - 2 channel, near trace = 1, far trace = 2	
									Rec length = 5s	
									Gate delay = 3s	
									∴ recording 3s - 8s.	
									Sample rate = 2ms.	
		00:37			56.276 31°56'16.54	20.504 75° 20' 30.25"			change from 20s rep rate to 15s	
		00:45			55.832 31°55'49.89	21.109 75°21' 06.52"				
		00:49							WHOI Shot logger turned off because of error msg	
		00:52:06							shot-log started again (only for test for rise)	
		1:00			55.137 31°55'08.23	22.007 75° 22' 00.39				
		1:13							Pulling gun towards ship to check hoses (start)	
		1:15			54.482 31° 54' 28.89"	22.647 75°22' 50.84"				
		1:19							guns shut off	

Line#	YrMoDy +JulDy	UTC Time ~~+Zone~~	Crs	Spd	PCODE Navigation	e.g. gluns Seismic System Sweep/Fire/Filters	Dir name ~~Tape#~~ ~~Disk#~~	depth ? rec Roll#	Comments Magnets Gravity	Comments
	321 ~~1:31~~	1:31			53.85.00 31°53'51.00"	23.691 75°23'41.45"				gluns off
		1:39								shooting again
		1:45			53.49.8' 31°53'29.87	24.137' 75°24'08.19"				
		1:59			52.918 31°52'55.07	24.965 75°24'57.90"				
		2:15			52.227' 31°52'13.59"	25.932' 75°25'55.89"				
		2:30	230°	7.95 km/h	51.538' 31°51'32.30"	26.843' 75°26'50.59"				
		2:45	240°	7.00 km/h	50.876' 31°50'52.53"	27.778' 75°27'46.68"				wind, 11-14 km
		2:59	220	7.25	50.250' 31°50'15.02"	28.668' 75°28'40.08"				
		3:15	235	7.20	49.507' 31°49'30.42"	29.619' 75°29'37.15"				gun pressure ~1800 psi
		3:30	240	7.70	48.814' 31°48'48.83"	30.502' 75°30'30.12"				" ~1600
				km/h						(2nd compressor off) ~3:40 fixed
		3:45	230	7.90 ~~4.90~~	48.186' 31°48'11.17"	31.409' 75°31'24.55'				gun pressure ~2000 psi ok
		3:59	220	7.90	47.507' 31°47'30.34"	32.224' 75°32'13.46"				
		4:07			~~31°46'49.04"~~	~~75°33'08.53"~~				passing RESOLUTION (BRH-4D)
		4:15	220	7.10	46.817' 31°46'49.04"	33.142 75°33'08.53"				
		4:32			46.109' 31°46'06.56"	34.154' 75°34'09.26"				
EOL1		4:41			45.715' 31°45'42.88"	34.706' 75°34'42.34"				EOL, start turn

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
SOL 2	321	04:57	50	9.08	44.752' 31°44' 45.12"	34.148' 75°34' 08.86"				Config. as line 1
		0								abt shot ~940 on a 2d
		05:15			45.559' 31°45' 33.52"	33.055' 75°33' 03.27"				gun pressure ~1600 psi
		05:34			.18 31°46' 11.39	.17 75°32' 10.73"				Change in character of single-channel data to lower frequency response
		05:45			.81 31°46' 48.61	.[illegible] 75°31' 22.50				Resolution called to say they won't be ready for walkaway until ~4:30 local am
		6:00			.36 31°47' 21.82	.68 75°30' 40.94"				
		6:15			.96 31°47' 57.80	.85 75°29' 50.81				~~Begin turn to line 3~~
EOL 2	([illegible])	6:25			.43 ~~31°48' 25.86~~	.04 ~~75°29' 02.29~~				Begin turn to line 3
		6:30			31°48' 25.86	75°29' 02.29				
		6:47			.56 31°47' 33.80	.64 75°28' 38.26				
BOL 3	(M-N)	6:48			~~31°47' 01.09~~	~~75°29' 15.76~~				Seismic character back to normal, change seems to correlate with heading
		07:00			.02 31°47' 01.09	.26 75°29' 15.76"				
		07:10			Spoke w/ resolution, hole conditions are poor. Vsp operations may start around 6:00am local.					Hole should be ready at 5:00am local and
		07:30			.75 31°45' 44.82	.95 75°30' 57.08				
		07:45			.07 31°45' 04.70	.82 75°31' 49.14				
		08:00			.46 31°44' 27.60	.76 75°32' 45.67				
EOL 3		8:13			.78 31°43' 46.82	.52 75°33' 31.47				
		8:30			.704 31°42' 42.25	.298 75°33' 17.85				

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
SOL4	321	08:43			31° 43' 15.45 .27	75° 32' 29.62 .49				
	(K-L)	09:00			31° 44' 5.76 .10	75° 31' 21.52 .36				
		9:15			31° 44' 46.35 .773	75° 30' 33.89 .565	Change of watch. D.L. → J.E.			
		9:25					Resolution reports that they won't be ready until 8 am at least. Problems with the hole.			
		9:30			31° 45' 24.47 .408	75° 29' 38.79 .647	after 9:29:04 obviously			
		9:45			31° 46' 01.85 .031	75° 28' 41.27 .688	cusmi data lost			
		10:00			31° 46' 40.23 .671	75° 27' 53.95 .899				
EOL4		10:04:25 ~~10:03~~			31° 46' 51.41 .857	75° 27' 40.70 .578				
		10:15			31° 47' 24.75 .4125	75° 27' 55.96 .933				
		10:30			31° 48' 09.33 .156	75° 28' 39.84 .664				
		10:45			31° 48' 57.12 .952	75° 29' 18.03 .301				
		11:00			31° 49' 51.07 .851	75° 29' 52.49 .875	Drillship wants to exchange some personnel, going to cancel line QR, haulin gear, head for drillship			
		11:25					Finished hauling gear on board. VSP to start at 13:30 GMT			
		12:00					Rendezvous with Resolution, crew and equipment exchange			

~~R0444~~ ~~V994D01A~~ V994D01A

V994001A
17 Nov. '95

	Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation (Zone / pos.)	Seismic System Sweep/Fire/Filters	Tape# Disk# (file name)	Roll# (depth of revs.)	Magnets Gravity	Comments (V994D01A)
VSP :	(1)	~~321:13:2~~ 321 13:40:24:32	3:11						GPS delay: 493m	.000715 / depth of revs	GI 105/105. del. 40 ms ~2000 psi 15 sec shooting int. slot = 5
		Delay leading edge of trigger,					First arrival shot gun		9.3	msec	depth of source ~ 5-6m
		14:45	stop shooting because of tests at "Resolution"								
		15:27	start shooting				* first ~~#~~ 263 from Courtney		⇒ start revs 264(?)		→ 540 (shot 297)
		15:28				31°45'17.55"	75°37' 36.50"				slight leak reported in one of the hoses to be fixed later
SOL		15:31		70°	7.0 kn	31° 45' 45.406' 24.33	75° 37' 37.373' 22.35				wind ~ 8 kts.
		15:45				31° 45' 45.764' 45.86'	75° 36' 36.349' 20.95"				
		16:00		60	6.0	31° 46' 46.145' 11.72"	75° 35' 35.263' 15.80"				
		16:15				31° 46' 46.589' 35.34"	75° 34' 34.166' 09.94"				9940 cut:
		16:30				31° 47' 47.017' 00.97"	75° 33' 33.044' 02.61'			~~stop~~	31° N 47.14', 75° W 32.75'
EOL		16:36				31° 47' 47.04~~[illegible]~~ 02.93"	~~75° 31'~~ 32.581' 75° 32' 34.88"		GPS delay:	000715	
		Resolution, 9940				giving up operations in the hole below 500 m, trying to					
		31°47.131	-75°32.726			resolution it → steaming to WP 6					
SCS :	Line 5 : WP 6H					start shooting, 19:25					
	SOL	19:32				31°54' 54.701' 42.05"	75°37' 37.423' 35.37"	2 channel streamer			near trace = 1, far tr. = 2
		JD 321	Nov. 17 1995					GI gun		105/105	~2000 psi

shooting interval 15 sec

11.85
2.55
9.3 kts

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
SOL 5 (~~5 cont.~~)	321 ~~[illegible]~~ 43 Nov. 17 1995	19:43	140	7.75 km/h	54.210' 31°54' 12.58"	37.295' 75°37' 17.71"	Rec. length ~~5~~ 7 sec, gate chl. 3s. → 8 sec			
							sample rate 2 msec			
							WHOI ~~sat~~ shot logger run (redundant)			
							PCODE Navigation			
	2000	20:00			53.301' 31°53' 18.08"	36.406' 75°36' 24.37"				
		20:15			52.504' 31°52' 30.21"	35.621' 75°35' 37.23"				
		20:~~30~~ 25			51.982' 31°51' 58.90"	35.073' 75°35' 04.40"				
		20:30			51.720' 31°51' 43.22"	34.797' 75°34' 47.79"				
		20:45	140	8.0 km/h	50.909' 31°50' 54.54"	34.004' 75°34' 00.24"				
		21:00	125	7.8	50.091' 31°50' 05.44"	33.226' 75°33' 13.54"				
		21:15			49.308 31°49' 18.49"	32.403' 75°32' 24.20"				
		21:30	140	4.6	48.506 31° 48 30.36	31.601' 75° 31' 36.05'				BRH6 @ 21:35
		21:48			47.558 31° 47 33.46	30.662 75° 30' 39.72				Dan & I checked GPS clock
										Timer - Ashtech (WHOI) +
										Bridge GPS = same. USGS
										Ashtech lags ~1s, Hatteras
										Display monitor lags 4-5s
										bridge GPS.
										Winds ~10 kts from NW -
										quite pleasant out.
		22:00	139	4.2	46.945 31°46' 56.70	30.006 75° 30' 00.34				

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
5 cont.	17 Nov 1995 JD 321	22:15			31° 46' 8.43 (46.141)	75° 29' 14.08 (29.235)				
		22:30			45 21.21 (45.354)	75 28 25.67 (28.428)				
		22:45			31° 44' 32.48 (44.541)	75° 27' 38.24 (27.637)				
EOL 5		2255			31° 43' 57.02 (43.950)	75 27 05.93 (27.099)			EOL #5 Gun down to wire 01-Deck compressor into larger circuit breaker.	
	Navigation, ~~321~~ + 18-321b, nav									
Line 6 :	WP I → J									
SOL 6	~~18-03~~ 322	00:30 ~~18:03~~	(?)		31°45' 55.56" (45.926')	75° 27' 09.49" (27.158')			GI-gun, 3000 psi 105/105, delay 45 ms 15 sec shooting rate No shot logger	
	(?) positions correct, time may be not; refer to navigation file									
		00:50	220	8.5	31°44' 58.63" (44.977)	75°28' 24.43" (28.407)				
		01:00			31°44' 28.99" (44.483')	75°29' 02.14" (29.035')				
		01:15			31°43' 45.48' (43.758')	75°30' 01.18" (30.020')				

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
6 Contd.	18 Nov. 95, 20322	GMT 01:30			31°43' 43.016" 00.95"	75°30' 30.982" 58.90 1/2				
EOL6		01:43 ~~01:43~~			31°42' 42.401" 24.07"	75°31' 31.755" 45.28"				
!	Navigation : ~~33~~ 18_322a.nav : JD wrong on the file (321 instead of 322!)									
	~~Going to pos. A', trying to resume VSP shooting after a 03:00~~									
	File obviously contains both lines 5+6 !									
	Probably file lost while collecting data ...									
	18 Nov 92 03:00				31°45' 45.388" 23.27"	75° 37' 37.494" 29.63"				
	03:45									Just talked w/ Steve on Resolution. 1st VSP was at 493m. Hoping next will be 655m. Then w. 8 clamps = 80m, do a walkaway. Estimate 1½-2hrs between walkaways. New AA' = 7km each side, now, not 8km
	05:25									Power supply problems on the resolution - still more delay.
BOL 7 (A-A-A)	JD 322 06:31				31° 46' .127 07.62	75° 36' .432 25.93				Drill ship expecting a 6 hr delay while checking out the cause of a voltage spike coming up the winch wire every 2s.

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
JD322	06:45				31° 46' 28.33 (.472)	75° 35' 37.19 (.620)		Calm	wind and seas	
	07:00				31° 47' 08.38 (.16)	75° 34' 42.16 (.70)				
	07:15				31° 47' 46.18 (.77)	75° 33' 49.42 (.82)				
	07:30				31° 48' 25.74 (.43)	75° 32' 54.62 (.91)				
	07:45				31° 49' 03.25 (.05)	75° 32' 04.85 (.00)				
	08:00				31° 49' 43.31 (.72)	75° 31' 14.27 (.24)				
	8:12	Pt Q			31° 50' 14.18 (.24)	75° 30' 34.83 (.58)				
	8:15				31° 50' 18.87 (.31)	75° 30' 23.54 (.39)				
	8:30				31° 50' 11.28	75° 29' 19.90				
	8:45				31° 50' 23.47 (.391)	75° 28' 16.13 (.269)				
EOL7 / BOL8	8:56:30				31° 50' 22.22 (50.370')	75° 27' 25.40 (27.423')		Pass over pt F, slowed to 1.5-2.0 knots		
	9:00				31° 50' 18.40 (.307)	75° 27' 17.42 (.290)				
	9:15				31° 50' 06.62 (.110)	75° 26' 45.21 (.759)				
	9:30				31° 49' 58.86 (.982)	75° 26' 10.30 (.172)				
	9:45				31° 49' 52.98 (.883)	75° 25' 34.96 (.583)				
	10:00				31° 49' 47.02 (.784)	75° 25' 00.71 (.012)				
	10:15				31° 49' 41.31 (.689)	75° 24' 25.72 (.439)		~~PASS OVER~~		
EOL8	10:19				31° 49' 39.37 (.656)	75° 24' 16.62 (.277)		pass over E		heading for U

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
	10:30				31°49' .824 49.46	75°24' .079 04.71				Calm seas
SOL 9	10:43:45				31 50 .168 10 10	75.24 .096 5.73	Starting next line. Bridge says that			
							Resolution ~~they hope~~ hopes to start at 7 local time, more			
							instructions forthcoming at 6:30 am local time			
	11:00				31° 50' .242 14.51	75° 24' .664 39.83				
	11:15				31° 50' .394 23.61	75° 25' .125 07.52				
	11:30				31°50' .524 31.46	75°25' .634 38.02				
EOL 9	11:33				31°50' 50.551' 33.05	75°25' 25.739' 44.36	Resolution says they will be ready in 20 minutes, turning guns off.			
	11:55						Streamer hauled in.			
	12:30	downloading GPS data from VSP					(in subdir V 994d01a backup)			
	12:40						Damage at the Drillship again. Anticipating 6 hr delay.			
	12:50	Streamer out again								
	12:55	0					Echo Sounder is on			
	13:00				31°48' .821 49.23	75°26' .473 28.38				
SOL 10	13:08	JD322			31°49' 49.333' 19.97"	75°26' 26.413' 24.79'	shot at 2 hrs again, GI 105/105, 3000 psi			
	13:15				31°49' 49.520' 31.18"	75°26' 26.345' 20.70"	No shot logger;			15 sec, 45 ms delay
	13:30			2 kn	31°49' 49.915' 54.90"	75°26' 26.245' 14.71"				

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
10 cont.	322	13:45			31°50' 50.318' 19.08"	75° 26' 26.146' 08.76"		Navigation was apparently not logged on this line.		
		~~14:00~~			~~51.694' 50.027' 31°50' 41.64"~~	~~75°26' 26.723' 43.36"~~				
		14:00			31°50' 50.723' 43.36"	75°26' 26.027' 01.64"				
		14:15			31°51' 51.139' 08.32"	75°25' 25.908' 54.45"				
EOL 10		14:17			31°51' 51.215' 12.89	75° 25' 25.903' 54.16				
		save navigation as 18-322 c. nav								
		shooting stopped and resumed again								
→ Line 11		~~→ line~~ ~~at~~ Link to next line, 4.5 knts. !								
SOL 11		14:27:30			31°51' 51.426' 25.55"	75°26' 26.641' 38.45"	in fact, almost continued recording			
		14:45			31°50' 50.937' 56.20"	75°27' 27.367' 22.06"				
		~~14:48~~			start turning ;					
SOL 12		1449			31°50' 54.00" 50.900'	75°27' 11.66" 27.194'	2 knb. again ;			
		1500			31°50' 50.831' 49.86"	75°26' 26.845' 50.72"				
		1515			31°50' 50.716' 42.98"	75°26' 26.382' 22.89"	EPC records strange (high amplit.)			
		15:30	100	1	31°50' 50.612' 36.69"	75°25' 25.900' 54.00"				
"EOL 12"		15:35 30			31°50' 50.561' 33.63"	75°25' 25.723' 43.33"	continue shooting until Y→Z			
		~same location at as 11:3~~0~~3 (EOL 9)								4 knts
						⇒ 9+12 to be ~~joined~~ merged				
/		~~16:00~~			~~31°51' 31.46" 51.524'~~	~~75° 24' 33.30" 24.555'~~	(continued shooting)			

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
SOL 13	18 Nov. 95 Jn 322	~16:00			51.524' 31°51' 31.46"	24.555' 75°24' 33.30"				~~[illegible]~~
	1 4 6	105/	105	GI	, 3000 psi	45 ms delay 15 sec	interval			~~rep-blow/ bot/ start/ soft time~~
SOL 13 (Z-Y)		16:07			~~51.098'~~ ~~[illegible]~~ 3,051' 05.93" 51.099'	24.579' 75°24' 34.72"				2 knots.
		16:15			50.878' 31°50' 52.67"	24.622' 75°24' 37.39"				GI gun delay set to 53 ms
		16:30			50.453' 31°50' 27.17"	24.767' 75°24' 46.00"				ship crossing behind
		16:45			50.027' 31° 50' 01.59"	24.881' 75°24' 52.87"				
		17:00			49.596' 31°49' 35.74"	24.992' 75°24' 59.50"				
EOL 13 / SOL 14		17:18			31° 49' .05 3.03	75° 25' .131 07.81				Passing over Y
Line 14	Y-L	17:30			31° 48' .07 40.28	75° 25' .171 12.61			and increasing speed to 4. knots	
		17:45			31° 48' .03 01.56	75° 26' .40 24.13			Backing up SEG4 files of	
									lines 5-9	
		18:00			31° 47' .38 22.94	75° 27' .095 5.72			GI gun delay set back to 45 ms.	
EOL 14 / SOL 15		18:14			31° 46' .755 45.30	75° 27' .842 50.50				
EOL 15		18:30			31° 47' .484 29.04	75° 28' .604 36.21				
		18:32							Call from Bridge - Resolution	
									wants us on site in 20-30 min	
									Break line & head to A' for	
									Start of VSP (will believe	
									it when we see it...).	
									Guns are off	

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
19:27	2 Nov 95 JD 322				31°48' 57.90	75°28' 29.81	Navigation		started	
SOL	19:30				31°48' 48.57 .810	75°28' 24.42 .407			operating +	SCS Streamer 3.5 KHz
VSPD02	19:32		245	4.2					Passing	A' Winds from NE
	1945				31 48 22.59 .38	75 29 28.91 .48				at about 10-15 kts
	20:00				31°47' 56.97 .950	75°30' 36.94 .616				
	20:15				31°47' 34.73 .579	75°31' 46.71 .779			atm. pressure is 1021 mbars	
	20:30				31°47' 07.42 .124	75°32' 52.69 .878				
	20:45		246°	4.1	31° 46 42.34 .706	75°33 59.65 .994				
	21:00		253 360	4.3	31°46' 14.68" 46.245'	75°35' 03.12" 35.052'				
	21:15				31°45' 53.47" 45.891'	75°36' 10.23" 36.171'				
EOL	21:24				31°45' 32.69" .545	75°36' 44.63" .744			21:38: GPS delay: 2000 TRR	
	Navigation		v	994	d02a.nav	≅ 18_322e.nav				
	21:50				Created gps nav-interpolated files for Steve, used 10 ms delay between shot firing and trigger. Station coords used were Lat = 31.78565, Lon = -75.54588					
					Depth of receivers: 650 mbsf					
	JD 323 19 Nov 95 0:00						More delay. Damage to the instrument in hole. Will reassess situation at 2pm local time tomorrow.			
							More single-channel profiling!			
	0:40						Streamer redeployed. Winds picking up, ~15 kts			
SOL16	1:00						Turning everything on.			

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
16 cont.	323	0104	137	4knots	47.021' 31°47' 01.24"	34.490' 75°34' 29.40"				N JOL
		0115	147	4.4	46.382' 31°46' 22.94"	33.937' 75°33' 56.19"		shooting	GI 105/105, 3000psi	
		0130			45.439' 31°45' 26.33"	33.207' 75°33' 12.43"			15 sec	45 msec delay
		0145	146	4.2	44.530' 31°44' 31.82"	32.448' 75°32' 26.90"		no shot log		
		0200	143	3.7	43.616' 31°43' 36.94"	31.708' 75°31' 42.50"		Limit 15 - 19 km		
		0215			42.709' 31°42' 42.53"	30.977' 75°30' 58.62"				
		0230			41.805' 31°41' 48.30"	30.266' 75°30' 15.97"				
		0245			40.890' 31°40' 53.39"	29.527' 75°29' 31.60"				
		0300	144	5.0	39.941' 31°39' 56.47"	28.746' 75°28' 44.73"				
EOL 16		0309			39.343' 31°39' 20.58"	28.286' 75°28' 17.18"				
		Start	turn		continue	shooting				
SOL 17		0313			39.225' 31°39' 13.47"	28.554' 75°28' 33.22"				
		0330	285	4.5	39.653' 31°39' 39.16"	29.978' 75°29' 58.65"				
		0345			40.023' 31°40' 01.43"	31.249' 75°31' 14.96"				
		0400	297	4.7	40.445' 31°40' 26.70"	32.525' 75°32' 31.49"				
		0415			40.835' 31°40' 50.10"	33.845' 75°33' 50.68"				
		0430			41.252' 31°41' 15.10"	35.103' 75°35' 06.20"				
		0445			41.665' 31°41' 39.88"	36.367' 75°36' 22.06"				

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
17 contd.	323 19 Nov. 95	0500	293	4.7	31°42' 42.041' 02.44"	75°37' 37.644' 38.64"				
		0515			31°42' 42.461' 27.70"	75°38' 38.917' 55.03"				
		0530			31°42' 42.373' 52.33"	75° 40' 40.167' 10.00"				
		0545			31° 43' .18 11.00	75° 41' .38 23.04		Calm wind and seas		
		06:00			31° 43' .55 33.02	75° 42' .63 37.87				
		06:15			31° 44' .03 1.87	75° 43' .82 49.50				
		06:30			31° 44 .47 28.20	75° 45 .05 03.19				
		06:45			31° 44' .79 47.30	75° 46 .44 26.72				
EOL 17 BOL 18		06:54			31° 45' .039 2.32	75° 47' .070 4.18				
		07:02	38	4.8	31° 45' .51 30.78	75° 46' .68 40.78	COG 38°	SOG 4.8 knts		
		07:19	29	4.5	31° 46' .55 33.03	75° 45' .82 49.22	COG 29	SOG 4.5 knts		
		07:30	30	4.8	47' .25 15.13	75° 45' .37 22.10	COG 30	SOG 4.8		
		07:45			31° 48' .17 10.33	75° 45' .67 40.12				
		08:00	28		31° 49' .10 06.22	75° 43' .99 59.45	COG 28			
		08:15			31° 50' .06 3.50	75° 43' .28 17.15				
		08:30			31° 50' .93 55.70	75° 42' .64 38.58				
		08:45			31° 51' .84 50.54	75° 41' .99 59.80				
		09:00	38	4.4	31° 52' .74 41.28	75° 41' .37 22.02				

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
18	9:15 323				31°53' 32.44 .541	75° 40' 36.84 .614				
	9:30				31°54' 28.52 .475	75° 40' 04.45 .074				
	9:45				31°55' 21.05 .351	75° 39' 21.82 .364		winds ~5 Kts mostly to our back		
	10:00				31°56' 15.82 .264	75°38' 40.31 .672				
	10:15				31°57' 12.33 .206	75°38' 00.73 .012				
	10:30				31°58' 09.67 .161	75°37' 19.61 .327				
	10:45				31°59' 07.14 .119	75°36' 38.07 .635		possibility of a walk by at 7:30?		
EOL 18/SOL 19	10:59				31°59' 59.42 .990	75°36' 00.21 .004				
	11:05							increased speed to	5-5.2 Kts	
	11:15				31°58' 54.12 .902	75°35' 37.89 .632				
EOL 19	11:20							going to terminate line, head for drillship		
	11:32				31°57 27.15	75 34 46.48				
	11:37							pulled streamer		
	12:42							winds @ around 18 Kts		
	15:00	Decided to abandon VSP, gun hauled in								
	Steam to Blake diapir site & Jun's line									

58.50 14.10

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
22:20	323						Deploying Streamer			
BOL 20		2229			32°24'45.68" (.761)	76°07'48.36" (.806)				
		2236								CROSSING POINT 1
		22:45			32°25'28.64 (.477)	76°08'20.70 (.345)				
		23:00			32°26'17.24 (.294)	76°08'58.72 (.979)				winds ~ 16 Kts
		23:15			32°27'09.30	76°09'36.71				
		23:30			32°27'58.50 (.975)	76°10'14.10 (.235)				
		23:45			32°28'48.51 (.809)	76°10'51.18 (.853)				
	324	0:00			32°29'39.23 (.654)	76°11'29.02 (.484)				passing pt 2, diapir
	324	0:15			32°30'29.96 (.499)	76°12'08.37 (.140)				
		0:30			32°31'16.95 (.283)	76°12'48.17 (.803)				
		0:45			32°32'04.87 (.081)	76°13'26.41 (.440)				
		1:00			32°32'52.83 (.881)	76°14'4.17 (.070)				
		1:15			32°33'43.33"	76°14'47.03"				
EOL20		121			32°33'8.61" (33.977')	76°14'59.11" (14.985')	acquisition stopped + started			leak in valve
SOL21		0128			32°33'45.19" (33.753')	76°15'23.61" (15.394')				to airgun
		0145			32°32'42.26"	76°15'39.40"				2200 psi
		0200	200	3.9	32°31'42.63" (31.71')	76°15'53.95" (15.899')				~~cross diapir~~

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
21 contd.	324 20 Nov 95	0215			32°30' 43.57"	76°16' 07.96"			wind ~ 13 knts	
EOL 21		02:23			30.161' 32°30' 09.63"	16.256' 76°16' 15.33"			continue shorting	
SOL 22 line 22		0231			29.694' 32°29' 41.63"	16.343' 76°16' 20.60"			between two lines,	
		0245	178		32°28' 48.03"	76°16' 29.90"			named line 22	
		0300			27.835' 32°27' 50.10"	16.703' 76°16' 42.20"			(is actually part	
		0315			32°26' 48.26"	76°16' 56.59"			of line 21 in nav data)	
EOL 22 SOL 23		0329	55	4.3	26.002' 32°26' 00.07"	16.963' 76°16' 57.80"				
		0345			32°26' 39.52"	76°15' 59.93"				
		0400			27.272' 32°27' 16.29"	15.027' 76°15' 01.63"				
		0415			32°27' 53.53"	76°14' 04.80"				
		0430	54	4.0	28.493' 32°28' 29.56"	13.196' 76°13' 11.76"				
		0445			32°29' 04.39"	76°12' 16.71'				
		0500			29.690' 32°29' 41.42"	11.384 76° 11' 23.04"			crossing chapter again	
	JD 324	0515			32°30' 20.02"	76° 10' 30.30				
		05:30			32° 30' 57.98	76° 9' 40.18				
		05:46			32° 31' 40.31	76° 8' 48.07				
		06:00			32° 32' 15.32	76° 08' 00.12				
		06:15			32° 32' 50.82	76° 07' 09.13				

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
Line 23 cont	324 06:30		44	3.9	32° 33' 29.68"	76° 06' 19.29"				
	06:45				32° 34' 8.53	76° 05' 31.17				
	07:00				32° 34' 45.63	76° 04' 42.30				
	07:15				32° 35' 22.21	76° 03' 53.10				
	07:30				32° 35' 57.98	76° 03' 03.63				
	07:45				32° 36' 38.20	76° 02' 19.25				
	08:00				32° 37' 12.97	76° 01' 23.35				
	08:16				32° 37' 54.50	76° 00' 28.45				
	08:31:30				32° 38 34.34	75° 59' 34.95				
	8:45				32° 39' 09.96	75° 58' 50.39				
	9:00				32° 39 49.60 .827	75° 57' 59.56 .993				
	9:17				32° 40' 33.17	75° 57° 01.28				
	9:30				32° 41' 06.48 .108	75° 56' 17.86 .298				
FOL23/4024	9:46				32 41 47.69 41.795'	75° 55 24.70 55.412'	Passing ctr-c	Pt 6. wouldn't	Attempted do it.	to stop and ... elected to let it run...
	10:00				32° 42' 38.94	75° 55' 24.78				
	10:15				32° 43' 39.47	75° 55' 19.87				
	10:30				32° 44' 41.81 .523	75° 55' 19.82 .330				
	10:45				32° 45° 44.06	75° 55' 18.10				

Line#	YrMoDy +JulDy	Time +Zone	Crs	Spd	Navigation	Seismic System Sweep/Fire/Filters	Tape# Disk#	Roll#	Magnets Gravity	Comments
	11:00				32 46 46.52 .775	75°55' 13.10 .218				
	11:15				32°47' 45.78	75°55' 14.34				
	11:30				32° 48' 43.07 .718	75° 55' 12.45 .208				
	11:45				32°49' 40.87	75° 55' 10.46				
	12:00				32° 50' 39.72 .662	75°55' 08.22 .137				
	12:16				32°51' 44.16	75° 55' 07.01				
EOL24	12:20:20				32 52.0305 52.051'	75° 55'.0947 55.158'		DONE	!!!!!	